

I Claim:

1. An amplifier for a system having a signal source for a transmission signal, an antenna, and a cable coupled to the signal source and the antenna, the amplifier comprising:

a sensor having a first input for coupling to the cable and an output,

a transmission amplifier module having an input for coupling to the cable and an output for coupling to the antenna, said transmission amplifier module including an attenuator having

a first input for receiving the transmission signal from the cable,

a second input connected to the output of said sensor, and

an output for communicating with the antenna; and

wherein said attenuator varies the gain of the transmission signal received at the first input responsive to a signal received at the second input from the sensor based on voltage of the signal received at the amplifier to produce a desired output power level for the transmission signal.

2. The amplifier according to claim 1, wherein said transmission amplifier module further includes

a first amplifier component having an input for receiving the transmission signal and an output connected to said first input of said attenuator,

a second amplifier component having an input connected to said output of said attenuator and an output for coupling to the antenna.

3. The amplifier according to claim 1, wherein said transmission amplifier module further includes

a gain control having an output,

a variable gain amplifier having a first input connected to said output of said gain control, a second input for coupling to the cable, and an output connected to said first input of said attenuator, and

a second amplifier component having an input connected to said output of said attenuator and an output for coupling to the antenna.

4. The amplifier according to claim 1, further comprising:  
receiving amplifier module having an input and an output,  
a first switch having a port for coupling with the cable, a first conductor connected to said input of said transmission amplifier module, and a second conductor connected to said output of said receiving amplifier module,  
a second switch having a port for coupling with the antenna, a first conductor connected to said output of said transmission amplifier module, and a second conductor connected to said input of said receiving amplifier module, and  
a switch controller in communication with said first switch and said second switch.

5. The amplifier according to claim 1, wherein said sensor includes  
means for determining the voltage level of the signal being transmitted, and  
means for coding a signal to instruct said attenuator the level of attenuation to apply to the signal being transmitted.

6. The amplifier according to claim 1, wherein said sensor includes  
a decoder connected to said output of said sensor, and  
a plurality of comparator components connected in parallel between said input of said sensor and said decoder, and  
wherein said comparators output a plurality of signals representative of the voltage level of the signal to be transmitted and said decoder uses signals to code a plurality of control signals for said attenuator.

7. The amplifier according to claim 6, wherein the number of comparator components is one less than the number of output power levels.

8. A kit comprising:  
the amplifier of claim 1, and  
a power injector including  
an input in communication with the signal source,  
an output in communication with the amplifier,  
an actuator for selecting an output power level, and

a voltage regulator in communication with said output and said actuator, said voltage regulator has a plurality of selectable output power levels.

9. A system comprising:

said kit of claim 8,

a signal source connected to said power injector,

a cable connecting said power injector and said amplifier, and

an antenna connected to said amplifier.

10. A method for setting the output power of a radio signal comprising:

receiving a desired output level for the transmission,

transmitting a signal having a RF component including the signal to be transmitted and a DC component representative of the transmission output level,

receiving the signal,

amplifying the RF component of the signal,

detecting the size of the DC component and providing an attenuation control signal,

attenuating the RF component of the signal to a level such that when the RF signal is transmitted it will be transmitted at the desired output level, and

transmitting the RF component of the signal.

11. The method according to claim 10, further comprising:

amplifying the RF component of the signal based on the value of the DC component such that the signal prior to attenuation is of a known power level.

12. The method according to claim 10, further comprising:

switching between a received mode and a transmission mode based on the presence of a signal to transmit.

13. A power injector for use in a system having a signal source, an amplifier, and cable, said power injector comprising:

an input in communication with the signal source,

an output in communication with the amplifier,

an actuator for selecting an output power level, and  
a voltage regulator in communication with said output and said actuator, said voltage regulator has a plurality of selectable output power levels.

14. The power injector according to claim 13, wherein said actuator is a knob.

15. The power injector according to claim 13, further comprising  
a capacitor connected to said input, and  
an inductor connected between said voltage regulator and said input and said output.

16. An bi-directional amplifier in communication with a signal source and an antenna, said bi-directional amplifier comprising:

means for switching between receive and transmit modes,  
means for setting the output power level of a transmission signal based on the voltage of the transmit signal and providing a control signal,  
means for attenuating the transmit signal based in part on the control signal, and  
means for amplification of a received signal.

17. The bi-directional amplifier according to claim 16, wherein the setting means includes

a plurality of comparators for determining the voltage of the transmit signal, and  
a decoder connected to said comparators, said decoder outputs the control signal based on the input received from said comparators.

18. The bi-directional amplifier according to claim 16, further comprising means for normalizing the signal input into said attenuating means based on the voltage of the transmit signal, and

wherein said normalizing means attenuates the signal input in an amount proportional to the voltage level of the transmission signal received from a signal source.

19. A kit for use in a wireless transmission system comprising:  
the bi-directional amplifier of claim 16, and  
a power injector having means for setting a desired output level for the  
transmission signal.